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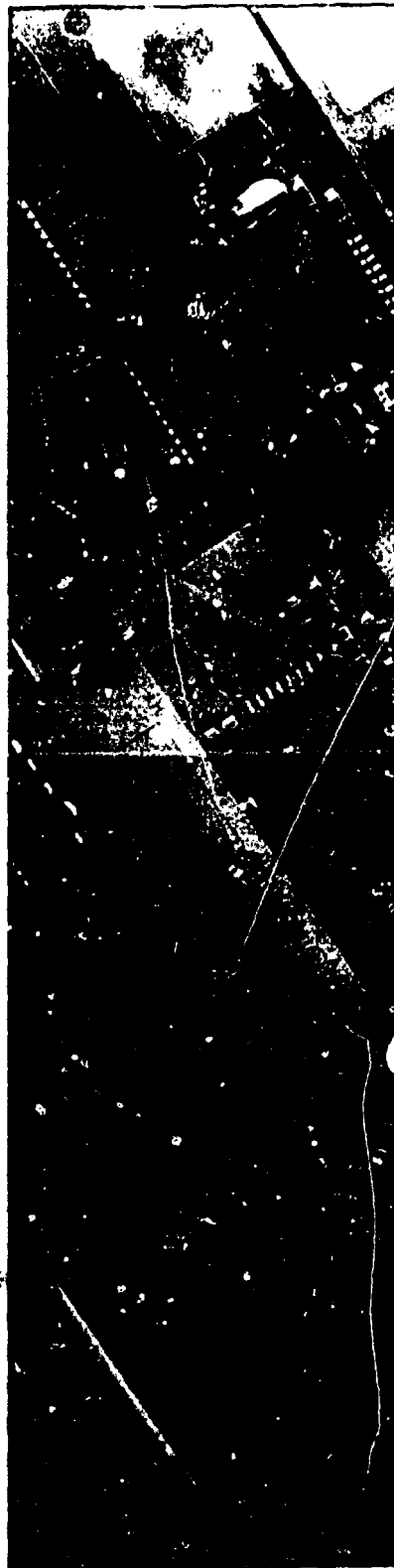
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June 1992

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1991 ANNUAL REPORT

AMTECH
Technology a Generation Ahead

Antech Corporation is the world's leading provider of radio frequency identification systems for the transportation and intelligent vehicle highway systems (IVHS) markets.

Antech's systems meet the relevant industry standards for automatic equipment identification set by the American Trucking Associations (ATA).

American National Standards Institute (ANSI), the International Standards Organization (ISO), and the Association of American Railroads (AAR).

Antech's philosophy is to provide the highest quality innovative products and services to our customers while maximizing return to our shareholders.

Antech's objective is to provide the global transportation and IVHS markets with a "seamless" technology that allows the use of the same identification tag anywhere in the world in an integrated, worldwide system.

Through our efforts and those of our valued distributors and dealers, Antech systems are now operating successfully in large scale commercial settings in a number of countries in Europe, Asia, and North America.



For a number of reasons, your management and employees believe that history will record 1991 as the watershed year in Amtech Corporation's relatively young life. **FIRST**, the extended effort

spanning several years to achieve multimodal standards for automatic transportation equipment identification reached fruition in April when the International Standards Organization (ISO) voted to approve an International Standard for automatic identification of freight containers and in September when the board of directors of the Association of American Railroads (AAR) approved a mandate to require universal adoption in North America of its AAR standard for automatic equipment identification. **THE** AAR decision will require the tagging of approximately 1.4 million rail cars and locomotives used in general interchange service in Canada, the United States and Mexico over a 30-month period ending July 1, 1994, with two tags per rail car. We also anticipate railroad investment in a substantial network of automatic equipment identification (AEI) readers and other peripherals during this period. **SECOND**, the acceptance of Amtech's radio frequency identifica-

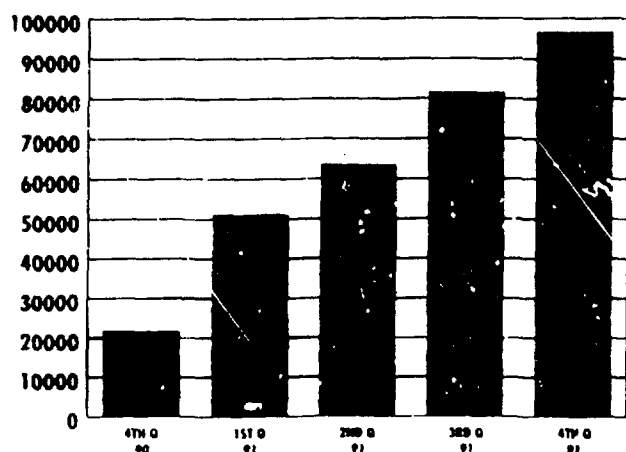
tion (RFID) technology in several of the other targeted applications markets broadened considerably. For example, during 1991, Amtech successfully implemented our electronic toll

"I believe that adoption of the Amtech automatic equipment identification technology as a mandatory standard for railway equipment moving in interchange service is the most significant step we have taken as an industry since our drive towards computerization some 25 years ago. This technology will enable us to position ourselves to satisfy our Customers needs as we move into the 21st century and turn around the losses in market share that we have experienced over the past 40 years."

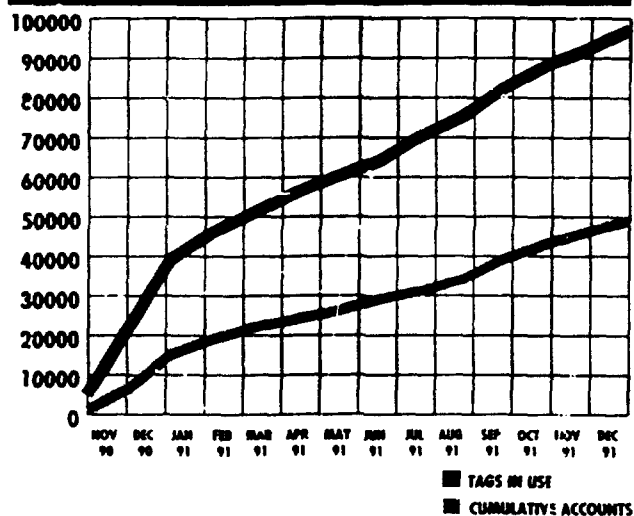
Larry D. Henrick
Asst. Chief of Transportation Car Management
Canadian Northern - North America
Chairman, AAR AEI Committee

collection system on all 10 Oklahoma Turnpikes, covering some 550 miles and 209 collection lanes, and now over 100,000 motorists in Oklahoma enjoy non-stop, paperless toll collection. Nearly 50,000 commuters in Dallas now use their TollTag® identification device for non-stop payment of their toll

OKLAHOMA TURNPIKE AUTHORITY (OTA)
PIKEPASS TAGS IN USE



OTA-PIKEPASS TAGS IN USE
AND CUMULATIVE ACCOUNTS



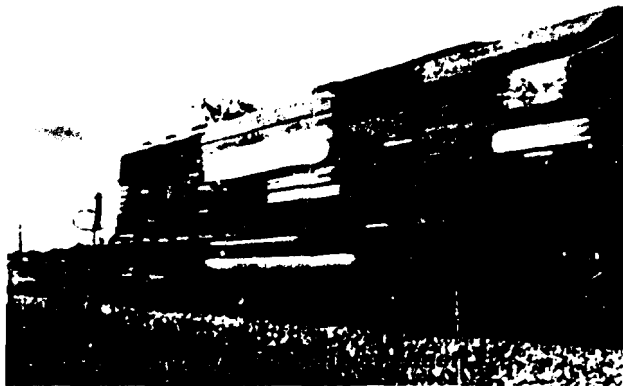
on the Dallas North Tollway. A number of other systems were installed or significantly expanded by Amtech or its distributors in France and Spain as well as in the United States. The system will soon be offered to motorists in Hong Kong under a recent agreement with a major tunnel operator there, The Cross-Harbour Tunnel Co., Ltd. and the Hong Kong government. **THIRD**, Amtech once again earned its reputation for development of leading-edge "Technology a Generation Ahead" products with the successful development of the high-speed read/write DYNICOM" products. Initially targeted to the European rail market, this system features very high speed performance (up to 400 km/hour — 240 mph), high data capacity and flexible tag memory. We expect to adapt this very robust technology to a new line of products and application sets in the months and years ahead. Related to the development activities, Amtech's technology leadership was again confirmed by the grant of three new United States patents and nine foreign patents during 1991.



Oklahoma's PikePass[®] is a tremendous success story for Oklahoma turnpike travelers. In the first 12 months of operation, over 96,500 PikePass tags were issued. The convenience, savings, increased safety and versatility sold itself to our customers."

**Richard L. Ridings
Chief Executive Officer
Oklahoma Turnpike Authority**

FOURTH, Amtech continued its policy of forming strategic alliances when appropriate and helpful to further our goals. In October Amtech formed a joint venture with Alcatel N.V., the European-based telecommunications and electronics giant with \$16 billion in revenues. The new joint venture provided substantial immediate financial benefit to Amtech including cash license payments, and it will allow Amtech to reduce operating expenses through consolidation of our activities in Europe. The joint venture will also undertake the capital investment required to manufacture and market the DYNICOM[™] system to railroads in Europe. Amtech has also made a decision to expand its distributor and value-added reseller (dealer) network during 1992. Through this strategy we hope to strengthen distribution relationships and end-market understanding and acceptance of RFID technology, as

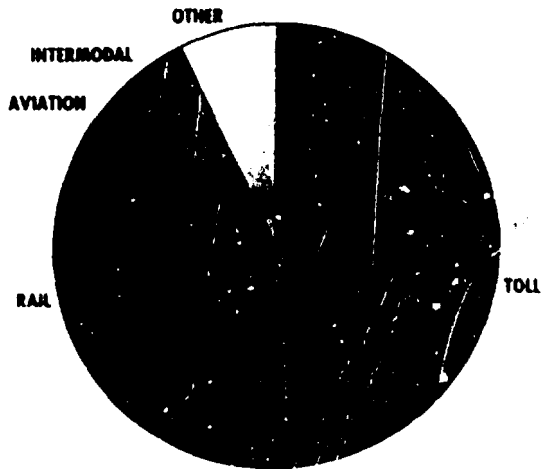


committed to customer service. NS pioneered the development of Automatic Equipment Identification (AEI) in the rail industry and was the first to install a reader network systemwide. AEI is an important step on the road to consistently meeting our customer's expectations."

Paul R. Rudder
Executive Vice
President, Operations
Norfolk Southern
Corporation

well as tap into new market areas and applications which Amtech does not have the resources to address efficiently. **FIFTH**, public policy took a potentially dramatic favorable turn in December with the passage by Congress of the new Intermodal Surface Transportation Act and the Intelligent Vehicle Highway Systems Act. These new statutes for the first time mandate federal funding participation in the rehabilitation as well as new construction of toll highways, bridges and tunnels. They also state a clear policy in favor of utilization of new technologies such as Amtech's to reduce roadway congestion, vehicle air pollution and related problems. **SIXTH**, in the fourth quarter the full reins of management passed from Mike Corboy, our retiring CEO, and Ken Anderson, our retiring Executive Committee Chairman to a young, yet experienced and dynamic management team. Our shareholders and employees alike are indebted to both Mike and Ken for their cheerful

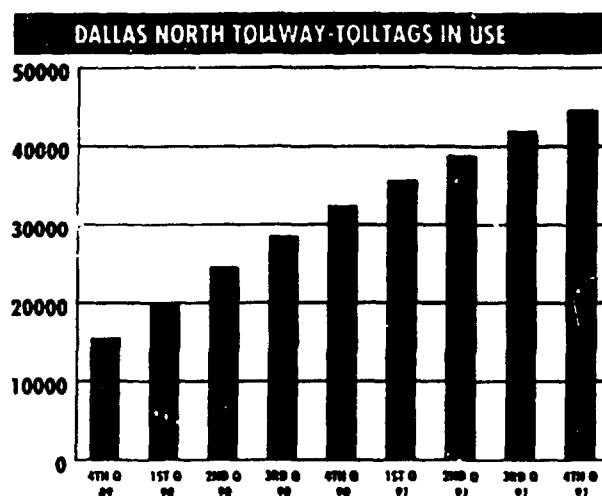
1991 REVENUE SOURCES



leadership and great contributions in helping to launch Amtech over the past four years. ¶SEVENTH, and perhaps most significantly, Amtech continued to march toward profitability as evidenced by a 39% reduction in the Company's loss from operations in 1991 compared to 1990 and a per share loss of \$0.06 in the last quarter of 1991 — the smallest quarterly loss since public reporting began in 1989. ¶The effective date for the AAR rail mandate was set for early 1992 to allow for railroads to formulate appropriate capital budgets and implementation plans. Amtech is now beginning to see the realization of large orders in the North American rail market. Overall order backlog stood at \$5.3 million at December 31, 1991, and has grown dramatically to over \$12 million as of mid-February 1992. ¶The electronic toll collection market continues to mature, but because of the nature of the state and local government agency procurement process, the sales cycle is lengthy. The prospects in the intermodal container transportation field remain bright and should

be advanced considerably by the AAR implementation decision. The Company is carefully planning the expansion of its manufacturing capacity in early 1992 to be able to respond to increased volumes. Additional robotic surface mount electronics assembly equipment is being added, as is fully automated custom-design tag testing stations. In the second quarter of 1992 we should have in-house assembly and test capacity for up to 200,000 tags per month. Management has also initiated an aggressive manufacturing cost control program.

Fourth quarter operations resulted in a net loss of \$588,000 (\$0.96 per share), an improvement of 41% when compared with 1991 third quarter net loss of \$994,000. Revenues for the fourth quarter were \$5,230,000, compared with \$5,249,000 for the third quarter. Revenues for the full year were \$18,748,000, up 27% from 1990 revenues of \$14,770,000. The net loss for the year declined 29% to \$4,985,000 (\$0.50 per share) from \$6,974,000 (\$0.71 per share). Year-end working capital amounted to \$13,554,000 as compared to \$13,556,000 at the end of 1990.





"Matson Navigation Company implemented Automatic Equipment Identification (AEI) at its Honolulu container terminal in March, 1991. The results have exceeded our expectations. We have virtually eliminated wasting time at our gates and improved the truck turnaround time in our terminal by at least 20 percent. The improvements we have been able to provide form a vital part of our service to the Hawaii community, and help us to continue our position as a leader and innovator in the intermodal industry."

**Gary J. North
President and Chief Operating Officer
Matson Terminals, Inc.**



IN SUMMARY, your management has made significant strides forward in 1991. Our shareholders have been rewarded with a rise in the (split-adjusted) market value of a share of Amtech common stock from \$6.33 at the close of the first trading day of 1991 to \$18.67 on December 31, or a 195% increase. The directors of Amtech approved a three for two common stock split for shareholders of record January 24, 1992, which was distributed February 13, 1992. This action should help broaden ownership of Amtech's shares and further enhance the marketability and liquidity of the stock for our investors. All of us at Amtech look forward to serving you in 1992.

G. Russell Mortenson
President & Chief Executive Officer

February 25, 1992

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K

(Mark One)

☒ ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the fiscal year ended December 31, 1991

☐ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE
SECURITIES EXCHANGE ACT OF 1934

For the transition period from to

Commission File Number: 0-17885

AMTECH CORPORATION

(Exact Name of Registrant as Specified in its Charter)

Texas
(State of Incorporation)

75-2216818
(I.R.S. Employer
Identification Number)

17304 Preston Road
Building E-100
Dallas, Texas 75252
(Address of Principal Executive Offices)
(214) 733-6600
(Registrant's Telephone Number, Including Area Code)

**SECURITIES REGISTERED PURSUANT TO
SECTION 12(b) OF THE ACT:**

None
(Title of Class)

Not Applicable
(Name of Exchange on Which Registered)

**SECURITIES REGISTERED PURSUANT TO
SECTION 12(g) OF THE ACT:**

Common Stock
\$0.01 Par Value
(Title of Class)

Indicate by check mark whether the Registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the Registrant was required to file such reports) and (2) has been subject to such filing requirements for the past 90 days.

Yes ☒ No ☐

Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ☒

As of February 14, 1992, there were 10,150,143 shares of Amtech Corporation \$0.01 par value Common Stock issued and outstanding, 8,146,052 of which having an aggregate market value of \$203,651,300 were held by non-affiliates. For purposes of the above statement, all directors and officers of the Registrant are presumed to be affiliates.

Portions of the Proxy Statement for the Registrant's 1992 Annual Meeting of Shareholders are incorporated by reference into Part III of this Form 10-K.

Part I

Item 1. Business

Overview

The Company designs, manufactures, markets and supports a line of hardware and software products and provides related services involving radio frequency electronic identification ("RFID") technology. The Company believes its proprietary RFID technology permits remote automatic identification of and communications with objects such as automobiles and rail cars at higher speeds, at longer distances, and in more difficult outdoor and industrial environments than technologies based on optical, magnetic, or other techniques. See "Technology." The Company has initially targeted five markets within the transportation and shipping industries for its RFID products and services: rail transportation, electronic toll and traffic management, intermodal transportation, vehicle fleet management and access control, and air freight. See "Industry and Markets." The Company's strategy is to establish its technology as the leading electronic identification technology in each of its targeted markets. As part of this strategy, the Company has encouraged various national and international standard setting organizations to adopt industry standards that are compatible with the Company's proprietary RFID technology. See "Industry Standards." The Company currently markets its products and services directly and through more than forty domestic and international distributors, subdistributors and dealers, as a subcontractor on certain projects, and through a European joint venture.

The Company, a Texas corporation, was incorporated in January 1988 and is the successor in interest by various merger transactions to a New Mexico corporation of the same name which was incorporated in November 1983. The Company's executive offices are located at 17304 Preston Road, Building E-100, Dallas, Texas 75252 (telephone (214) 733-6600). The Company has five direct and indirect wholly owned subsidiaries: Amtech Systems Corporation, Amtech World Corporation, AMGT Corporation, Amtech GmbH and Amtech B.V. Unless the context otherwise requires, all references herein to the "Company" shall include Amtech Corporation, its wholly owned subsidiaries, and their predecessors.

Technology

RFID technology remotely identifies an object through the use of radio frequency signals rather than bar codes, magnetic cards, or other means. A small transponder device ("*tag*") is attached to an object, and when that object passes an interrogator ("*reader*"), an identification code is retrieved electronically from the tag through a technique referred to as "modulated backscatter." Specifically, a radio signal emitted by the reader system prompts the tag to modulate the signal with a unique code and reflect the modulated signal to the reader at the same frequency. Each tag may be programmed to carry information concerning the object to which the tag is attached, which the reader recognizes by identification of the signal when the tag passes the reader. Data in certain tag types may also be modified dynamically by the reader system using "read-write" RFID technology. This latter capability is considered important by the Company in certain electronic toll collection, traffic management, and rail applications.

The Company believes RFID technology is superior to other forms of automatic identification technology in a number of respects. Unlike optical and magnetic identification technologies (such as bar codes and inductive cards), which require that the object to be identified be essentially stationary and in close proximity to the reader, RFID technology permits identification of objects

moving at higher speeds and at greater distances from the reader. Moreover, the performance of systems based on the Company's RFID technology is not impaired by the presence of dirt on the tag or other environmental conditions such as rain, fog or snow. Negative environmental factors previously contributed to the failure of a bar code system for automatic identification of rail cars and intermodal containers in the 1970s.

The Company believes that it offers the only RFID system in which a single tag is designed to be read in multiple frequency bands. This "spectrum agile" capability provides the Company with a competitive advantage in certain of its targeted markets, particularly in the intermodal transportation market where equipment may pass through several countries whose regulatory authorities require the use of different frequency bands. In addition, the Company offers both an "active" tag, which is battery-powered, and a "passive" tag, which does not contain its own power source. The active tag increases the range of the RFID system, which is important in intermodal transportation and air freight applications. The passive tag eliminates batteries and other tag maintenance requirements and reduces the cost of the tags, which the Company believes is important to toll collection customers as well as to certain railroad and fleet management customers, who may require many thousands of the tags to automate identification of their cargo or fleet equipment.

An important complement to the Company's proprietary RFID hardware technology is computer software developed by the Company and its distributors and resellers to operate the RFID systems and enable a customer to collect and analyze the information gathered by the Company's RFID systems. The Company believes that its total systems approach will facilitate acceptance of its RFID products within the Company's targeted markets.

Industry and Markets

The five markets initially targeted by the Company for its RFID products and services are: rail transportation, electronic toll and traffic management, intermodal transportation, vehicle fleet management and access control, and air freight. The Company has developed products and services to address each of these markets, including identification hardware, such as tags, readers and field tag programmers, and software systems that range from simple reader control applications to large scale electronic toll collection systems. In addition, the Company provides a variety of support services.

Rail Transportation

The Company's RFID technology has two primary applications within the rail transportation market. The first application is automatic equipment identification ("AEI") systems. Present methods for identifying locomotives and rail cars require a clerk or video camera to record identification numbers as locomotives or rail cars enter or leave a rail terminal. This data must subsequently be entered manually into a computer and, therefore, is not immediately reported, may be incomplete, and is subject to data entry errors.

Employing the Company's technology, a railroad can install tags on locomotives and rail cars and install readers at rail terminals and selected intermediate points. As the locomotive or rail car passes the reader, the reader retrieves the identification information on the tag and forwards this information to the railroad's computer network. In read-write AEI systems, the reader can also "write" new data into the tag. The Company's AEI system thus enables the railroad to gather and disseminate data on a complete, accurate, and current basis, resulting in better customer service and improved asset utilization. See also "Industry Standards."

A second application of the Company's technology, referred to as automatic train control ("ATC") systems, involves installation of readers on locomotives and tags, programmed with location data, between the rails of the track. By placing the tags at specified intervals and wayside control points, a railroad can obtain real-time information with respect to the location and movement of its rail equipment and use such information to maintain safe distances between trains and to ensure orderly flow of rail traffic on heavily traveled rail lines. The Company believes ATC systems will be more readily accepted in international markets in which passenger train traffic is substantial. The Company, therefore, has initially targeted these international markets for its ATC systems and is implementing pilot systems in certain of these markets.

In addition to RFID hardware, the Company has designed software to meet the special needs of the rail transportation market. For example, the Company has developed a system, including an auxiliary data processor and related software, to record the passage of a train and automatically report its locomotive and rail car composition and orientation to designated railroad computers to coordinate locomotive and rail car utilization. Other capabilities such as remote equipment diagnostics and the monitoring of wheel bearings for potential problems are included.

Electronic Toll and Traffic Management

Use of the Company's RFID technology for electronic toll and traffic management ("ETTM") typically involves installation of a reader at a toll booth and placement of a TollTag® electronic identification device inside a vehicle's windshield. Vehicles equipped with TollTag identification devices are identified by the reader as they approach the toll booth. This identification is passed to a lane control computer, which determines the validity of the device for use at that toll facility and, in turn, causes signal lights, alarms, or gates to be activated based upon the validity tests and allows a non-stop, cashless passage by the vehicle through the toll booth. The entire transaction, including date, time, lane number, and identification code, is passed to a central computer, which posts the transaction against the TollTag identification device user's account, resulting in a charge against a prepaid account, credit card or in an eventual billing.

The Company's ETTM systems do not, however, require either toll booths or interior windshield mounting of tags. Toll and revenue collection systems have recently been implemented using overhead readers on bridges and other structures, thus allowing accurate identification of vehicles and revenue collection at highway speeds and in open lane environments. The Company's ETTM systems also can operate using antennas buried in highway pavement, or tags located on vehicle license plates or bumpers.

In addition to ETTM hardware, the Company believes that it offers the most complete and sophisticated ETTM software system in the world. Functionally, this software system (1) records driver and vehicle information, (2) issues and validates new TollTag identification devices, (3) invalidates lost or stolen TollTag identification devices, (4) reads and validates transactions at toll booths, (5) captures and forwards transactions to the central billing computer, (6) posts transactions to drivers' accounts, (7) automatically bills drivers' accounts or credit cards for charges, (8) prints numerous accounting and other reports, (9) monitors each system component for failure every thirty seconds, and (10) performs system-wide diagnostics and reports any failures via telephone pagers to technicians. When combined with the Company's read-write hardware technology, the software system provides an effective replacement for the "ticket" common on toll facilities which utilize "distance traveled" as the basis for toll calculation. Time and location data written dynamically into the tag as the vehicle enters the toll highway is retrieved upon exit allowing immediate trip cost determination and display for the driver.

ETTM provides convenience, reduced traffic congestion and automobile emissions, reduced collection costs, and, in some instances, discounted toll charges for vehicles equipped with TollTag identification devices. Due to these benefits, the Company believes that ETTM will become a prominent method of collecting tolls and revenues at major toll facilities and airports, and that the combination of its RFID technology and software system will give the Company a competitive advantage in this market.

The Intermodal Surface Transportation Efficiency Act of 1991 and the Intelligent Vehicle Highway Systems Act of 1991, passed by the Congress of the United States in December 1991, provide federal funds for the development of new toll facilities, conversion of existing free facilities to toll facilities, and the refurbishment of existing toll facilities, and includes provisions to encourage the use of ETTM systems such as those offered by the Company in achieving the goals of this legislation. The Company believes that this legislation may substantially expand the domestic ETTM market during the next five years.

The ETTM system can provide airports with the same benefits when used to collect fees from commercial vehicles (such as taxis, shuttle buses, and limousines) for use of roadway facilities. Several airport projects have already proven successful and cost effective.

Intermodal Transportation

Another market targeted by the Company is electronic identification of intermodal freight equipment including intermodal containers, chassis, tractors, and generator sets. The shipping, railroad, and trucking industries use intermodal containers to transport goods worldwide and currently have computer systems that attempt to monitor the location and disposition of these containers. Presently, each transfer of a container is generally recorded manually by a clerk who confirms the container number, type, and size. This data is subsequently input into a computer system in a process subject to human errors and with detrimental effects on the timely availability of data for equipment asset management and customer service.

With the Company's RFID technology, a firm engaged in intermodal transportation can install tags on its equipment, including containers, and utilize readers, at points of transfer and storage, to automatically identify each piece of equipment, its type and size, and immediately record the information accurately in a computer. Specifically, the Company's intermodal RFID system permits: (1) identification of equipment entering or exiting an intermodal container yard; (2) movements of equipment within the yard; and (3) transfers of intermodal equipment between the intermodal container yard, ships, rail cars, or other means of transportation. In addition, the Company has developed a mobile inventory vehicle system in which a vehicle that is specially equipped with a reader can drive through an intermodal container yard and automatically record the location of each piece of equipment. The Company also has designed software products to integrate the data collected by readers in its intermodal RFID systems into computer systems currently used by its customers. The Company's RFID system thus enables carriers, shippers, and consignees to obtain accurate and timely information on the status and location of their equipment and goods. Hence, the carriers can better service customers and enhance their own asset utilization.

The Company believes that it offers the only RFID system in which a single tag is designed to be read in multiple frequency bands. See "Technology." Since intermodal equipment may pass through several countries whose regulatory authorities require the use of different frequency bands, this "spectrum agile" capability of the Company's intermodal RFID system gives the Company a competitive advantage within this market.

Vehicle Fleet Management and Access Control

The fourth market targeted by the Company is the vehicle fleet management and access control market. As with the rail and intermodal container markets, electronic identification of tractors, trailers, containers, converter dollies, and related equipment allows fleet operators to increase productivity, improve equipment utilization, eliminate clerical and data errors, enhance customer service, and control assets more effectively. Types of fleets include, among others, common and contract carriers of general commodities, specialized motor carriers, transit systems, taxicabs, police cars, and courier services. Other access control applications include gated communities, parking lots, airports and military bases, as well as various other types of secured facilities.

Automatic identification of equipment on arrival at a yard or terminal results in accurate and timely information for dispatch, yard operations, customer information services, and preventive maintenance. In certain cases, scale weight and unit identification can be automatically combined for compliance with highway weight limits. Mobile inventory vehicles, described above under "Intermodal Transportation," can significantly increase a carrier's efficiency in yard inventory control applications. The Company also offers software products designed for use in the vehicle fleet management and access control market, including yard access and control systems and software that tracks moving vehicles such as large trucks crossing state lines.

Air Freight

An additional market for the Company's products and services is aircraft freight equipment. This market includes Unit Load Devices ("ULDs"), which are widely used by air carriers around the world for transport of freight and baggage in aircraft holds, and the related ground equipment used to transport and handle the ULDs. The Company believes the ULD market to be analogous in nature to the intermodal freight container market since airlines face many of the same problems in identifying, tracking, and handling their ULDs as the shipping industry does with its intermodal containers. In addition, the Company believes that there is a growing trend to establish the use of intermodal containers for air transport. The Company believes its products can be readily adapted to the ULD market while retaining its technological competitive advantages of superior reading range and speed in difficult environmental conditions.

Software and Systems Integration

Once data has been retrieved by an automatic identification system, it must be integrated into a customer's primary computer system to be of significant use to the customer. Consequently, software products that serve this function are as important as RFID hardware in an operational RFID system. The Company has designed, and encouraged its distributors and resellers to design software products that gather, store, package, and forward the identification data captured by the Company's RFID hardware to computer systems currently used by customers. The Company's software products can interface with many computer systems used by companies in the transportation industry.

Other Services

In addition to RFID hardware and software products for the markets described above, the Company and its distributors offer various types of services, including facilities design, custom systems integration, field installation, maintenance, training, custom programming, facilities management, computer facilities management and computer hardware procurement, installation, and integration. Purchasers of the Company's RFID systems may contract with the Company or its distributors for one or more of these services to suit their particular needs.

Industry Standards

In September 1991, the Association of American Railroads ("AAR") voted to make its previously voluntary standard on automatic equipment identification, which is based on the Company's radio frequency product line, mandatory, effective early in 1992. There will be an implementation period ending by June 30, 1994, under which all rail cars and locomotives operating in interchange service in North America (Canada, the United States and Mexico) are required to be tagged. Based on information provided by the AAR, the Company believes that there are approximately 1.4 million pieces of rail equipment subject to the standard and presently in interchange service. The AAR standard states that each piece of rolling stock is to be equipped with two tags. Additionally, the railroads are expected to install reader systems throughout their networks to record equipment movement activity. The impact of this development on the Company's revenues during the implementation period will depend on, among other things, how the carriers and rail car owners schedule the implementation, the availability of railroads' capital funding in any given period, and the AAR maintaining the mandatory AEI standard substantially in its present form. The Company has committed to the AAR that it will license the necessary technology to qualified companies, if requested and on reasonable commercial terms, so that alternate sources of products complying with the AEI standard could be available.

The Association of American Railroads has designated a competing technology to be a "Voluntary Recommended Standard" for automatic train control systems in the United States and Canada. This technology has not, however, been implemented in North America. See "Industry and Markets".

In June 1989 the International Standards Organization ("ISO"), after extensive examination and testing of remote identification technologies, gave initial approval of a Draft International Standard which specifies technical requirements for automatic identification of intermodal containers worldwide. In April 1991 this standard gained formal approval and was published as International Standard 10314 in October 1991. This follows publication of a similar standard by the American National Standards Institute (ANSI MH5.1.9-1990 in October 1990). The Company's RFID technology meets the present technical specifications of both standards.

In August 1990 the American Trucking Association ("ATA") gave final approval to a standard for automatic identification of tractors, trailers, and related motor carrier equipment based upon the Company's proprietary RFID technology.

Although of these standards only the AAR AEI standard is mandatory, taken together, they provide compatible multimodal industry-wide standards for automatic equipment identification covering the major modes of surface commercial transportation.

Customers

During the year ended December 31, 1991, the Oklahoma Turnpike Authority accounted for 34% of the Company's sales. During the year ended December 31, 1990, the Oklahoma Turnpike Authority and SNCF (French National Railroad) accounted for 28% and 13% of the Company's sales, respectively. During the year ended December 31, 1989, American President Lines, Ansaldo Trasporti S.p.A., formerly WABCO Westinghouse Compagnia Italiana Segnali S.p.A., SNCF, the Louisiana Department of Transportation and Development, and Mitsubishi Corporation accounted for 20%, 13%, 12%, 11%, and 10% of the Company's sales, respectively. During these periods, no other customer accounted for 10% or more of sales. The Company's RFID systems have been or are presently being installed in a number of foreign countries. Export sales accounted for approximately 26%, 30% and 42% of the Company's sales during the years ended December 31, 1991, 1990 and 1989, respectively.

During the year ended December 31, 1991, sales in North America, the Far East, and Europe accounted for 76%, 3% and 21% of the Company's sales, respectively. During the year ended December 31, 1990, sales in North America, the Far East, and Europe accounted for 71%, 6% and 23% of the Company's sales, respectively. During the year ended December 31, 1989, sales in North America, the Far East and Europe accounted for 59%, 10% and 31% of the Company's sales, respectively.

Marketing and Distribution

The Company generally markets, sells, and services its products through select distributors, dealers and subdistributors, and directly or as a subcontractor on certain contracts. The Company has enlisted a number of qualified distributors and dealers for the sale and support of the Company's products worldwide.

The marketing and distribution agreements between the Company and each of its distributors and dealers vary in term and generally obligate the Company to provide personnel support to install its products and train operating personnel and require the distributor to purchase an initial demonstration system, to obtain all governmental clearances or licenses for particular installations of the Company's products, and to obtain prior written consent of the Company to any sales efforts of the distributor outside of its specified applications market or territory. The marketing and distribution agreements also generally contain provisions to protect the Company's proprietary information. Although the agreements are generally non-exclusive, the Company has granted certain exclusive rights to certain of its distributors. See also "Manufacturing" and "Joint Ventures."

Manufacturing

The Company's research and development, product engineering, and manufacturing operations are located in two facilities aggregating approximately 27,000 square feet in Santa Fe, New Mexico, and a smaller facility of 11,500 square feet in Albuquerque, New Mexico. In the manufacturing area, the Santa Fe facilities are used primarily for the production and testing of tags, reader systems, programmers, and related products. Tag printed circuit boards had been obtained on a subcontract basis, but the Company acquired the business operations and assets previously used for this subcontract work on January 31, 1991 and since then has performed this work itself. As production requirements increase, tag production may be shared with subcontractors who meet the Company's quality control and cost requirements. In all cases, final testing and shipment is handled at the Company's Santa Fe facilities. The Company generally purchases devices, components, and subassemblies from more than one source.

The Company will invest in additional automated production equipment during 1992 in order to increase its manufacturing capacity to meet expected production requirements in 1992 and later years, particularly for rail tag demand as a result of the mandatory AAR standard.

The Company maintains quality control procedures for its products, including testing during design, prototype, and pilot stages of production, inspection of incoming raw materials and subassemblies, and testing of finished products using automatic test equipment. The Company has initiated the certification process for both the International Standards Organization ISO 9001 quality standard and the Association of American Railroads Quality Standard M-1003. The Company is actively engaged in quality assurance programs throughout the organization. The Company's general terms and conditions for sale of tags, readers, and related hardware include a one-year warranty. The Company generally warrants that certain of its software products will conform to the applicable software product description at the time that an order is accepted. To date, warranty costs have not been material.

In connection with the uniform standards approved by the AAR, ANSI and ISO, the Company has consented to offer field patent licenses for its RFID technology on reasonable terms to qualified manufacturers for defined applications of its proprietary technology.

In June 1988 the Company granted an exclusive license to Mitsubishi Corporation to manufacture and market certain of the Company's products in Asia for a ten year term. In return for the grant of the license, the Company is entitled to receive payments on integrated circuit chips sold to Mitsubishi for the manufacture of certain RFID products. The Company in October 1991 entered into an agreement with its affiliate, Alcatel Amtech S.A., to grant it certain exclusive and non-exclusive licenses to manufacture certain of the Company's products for the rail, trucking and intermodal container markets in greater Europe and parts of Africa. In addition, the Company has licensed Ansaldo Trasporti S.p.A. to manufacture certain read-write products in Europe. No manufacturing activities have taken place pursuant to any of such licenses to date, although it is anticipated that Alcatel Amtech S.A. will initiate production of certain products in the European Economic Community during 1992.

The Company's backlog, calculated as the aggregate of sales prices of orders received from customers less revenue recognized, was approximately \$5.3 million at December 31, 1991, as compared with \$2.6 million at December 31, 1990.

Joint Ventures

In October 1991 the Company entered into a joint venture with Alcatel AVI S.A., a subsidiary of Alcatel N.V. The resulting company, named Alcatel Amtech S.A., is owned approximately 51% by Alcatel AVI S.A. and 49% by the Company. As part of the formation of the joint venture, the Company transferred its shares of Amtech SARL, formerly a wholly owned European subsidiary of the Company, to Alcatel Amtech S.A. Alcatel Amtech S.A. has exclusive and non-exclusive rights to develop, manufacture, market and service certain of the Company's products for public and private passenger and freight transportation applications (other than road toll, parking and road pricing applications and excluding industrial automation applications) throughout greater Europe and parts of Africa, with an initial focus on the rail and related transportation market. This joint venture will allow the Company to substantially consolidate its European operations formerly conducted through Amtech SARL, Amtech GmbH and Amtech B.V. into Alcatel Amtech S.A.

The Company received substantial payments in connection with the formation of the joint venture company (See Note 11 to Consolidated Financial Statements) and, in addition to its continuing equity interest in Alcatel Amtech S.A., it is entitled to receive an additional \$2,000,000 upon completion of certain new product development work (which amount shall be provided by the Company's joint venture partner, Alcatel AVI S.A.) and up to a further \$5,000,000 based on Alcatel Amtech S.A.'s use of integrated circuit chips using the Company's proprietary technology. The Company anticipates that the \$2,000,000 payment will be received in 1992.

Separately, the Company along with American President Companies, Ltd., Mitsubishi Corporation and Union Pacific Technologies (a subsidiary of Union Pacific Corporation) are stockholders in Amtech Logistics Corporation ("ALC"). The initial business strategy of ALC, which has not yet begun active operations, will be to offer data and related management information from the Company's customers' installed reader base to carriers and other interested parties. The Company has entered into a license agreement with ALC which provides ALC with the rights to this information. The Company owns approximately 31% of ALC's outstanding stock.

Research and Development

Research and development expenses amounted to approximately \$4,762,000, \$4,854,000, and \$3,563,000 in 1991, 1990 and 1989, respectively. Included in these amounts were approximately \$2,798,000, \$2,305,000 and \$849,000 of research and development expenditures charged to cost of sales in the 1991, 1990 and 1989 consolidated financial statements, respectively, pursuant to customer contracts. Although the Company spends significant sums on research and development, there can be no assurance that the Company's new product development efforts will be successful. As of December 31, 1991, the Company employed approximately 50 people in research and development, software development and product engineering.

Patents and Trademarks

The Company holds fourteen issued patents in the United States, thirteen issued foreign patents, and eight allowed foreign patent applications covering various aspects of its RFID technology. The Company continues to pursue a program of international patent application filings. The Company currently has a variety of patent applications pending in Australia, Canada, Israel, Japan, Norway, South Korea, Taiwan, and the European Patent Office (Belgium, France, Italy, the United Kingdom, Germany, The Netherlands, Sweden, and Switzerland). These patents and pending patent applications cover, among other things, the structure and circuitry of the Company's tags and reader systems, as well as the "modulated backscatter" communication protocol by which the tags and readers communicate. Certain licenses to the patented technologies have been granted. See "Manufacturing."

The Company also relies on contracts, copyrights, trademarks, and trade secret laws to establish and protect its proprietary rights and to maintain the confidentiality of trade secrets, proprietary information, and creative developments, although there can be no assurance that the Company's patents, contracts, copyrights, and other rights will adequately protect its interests. The Company's logo, "AMTECH®," and the mark, "TollTag®", are registered trademarks of the Company in the United States (and, in the case of AMTECH®, in certain European countries) and are the subject of registration applications in certain foreign countries.

Competition

The market for the Company's products is characterized by competing forms of electronic identification technology and industry standards. The Company believes that the principal competitive factors in its targeted markets are product performance and quality, reliability, compatibility with host computer systems, technical support and service, and price. The Company believes that it has certain competitive advantages, including its relative product performance in accuracy and reading range, product capabilities due to spectrum agility and deliverable software products, compatibility with established industry standards, established domestic and international distribution channels, and a significant base of operating systems on a commercial scale. Some of the Company's existing and potential competitors may have greater financial, marketing, and technological resources than the Company and, therefore, no assurance can be given that the Company will continue to compete effectively in its targeted markets.

Government Regulation

The Federal Communications Commission ("FCC") regulates the radio frequency emissions of RFID products in the United States. The FCC requires, pursuant to temporary regulations, that each site at which the Company's products are to be installed or used receive an operating license. Many foreign jurisdictions also require "type" approval by regulatory agencies prior to the sale or shipment of RFID products as well as an operating license for each site. To date, the Company's products have been demonstrated to operate well within the regulatory standards in all countries in which the products have been tested, type approvals have been obtained in many of the major industrial nations in the world, and the Company believes that its products can be readily adapted to applicable regulations in most, if not all, other countries. Further, the Company's products operate within established standards for radio frequency non-ionizing radiation emissions promulgated by, among others, the American National Standards Institute, the Occupational Safety and Health Administration and the International Electrotechnical Commission. The Company, however, cannot predict the extent or impact of future legislation or regulation by federal, state or local authorities in the United States or foreign countries. Further, pursuant to FCC regulations, the Company's products must avoid interfering with certain transmissions in the 902-928 megahertz frequency band and are subject to possible interference from other radio facilities operating in that band in the United States.

Employees

As of December 31, 1991, the Company employed 193 people. None of the Company's employees is subject to collective bargaining agreements. The Company believes that relations with its employees are good.

Item 2. Properties

The Company leases approximately 56,000 square feet of space for its corporate offices in Dallas, Texas under a lease that commenced in November 1990 and has a five-year term with two one-year renewal options. The Company also leases approximately 2,800 square feet of space in Dallas as a sales office for distribution of ToliTag identification devices for the Dallas North Tollway project. The Company leases approximately 27,000 square feet of space for its research and development, product engineering, and manufacturing operations in two facilities at Santa Fe, New Mexico, with the lease for the primary facility expiring July 31, 1992 subject to one five-year renewal option, and leases a smaller facility of approximately 11,500 square feet in Albuquerque, New Mexico.

The Company believes that its existing facilities are adequate to meet current requirements.

Item 3. Legal Proceedings

None.

Item 4. Submission of Matters to Vote of Security Holders

None.

PART II

Item 5. Market for Registrant's Common Equity and Related Stockholder Matters

The Company's Common Stock, \$.01 par value (the "Common Stock"), is traded on the NASDAQ National Market System under the symbol "AMTC". The Company effected a three for two split of its Common Stock in the form of a stock dividend, which was distributed on February 13, 1992 to stockholders of record on January 24, 1992. As of February 14, 1992, there were 10,150,143 shares of Common Stock outstanding held by approximately 500 stockholders of record. The Company has not declared any cash dividends on its Common Stock, nor are any currently anticipated.

The high and low sales prices of the Common Stock as quoted by the NASDAQ National Market System, and as adjusted for the stock split, for the years ended December 31, 1991 and 1990 were:

Quarter Ended	1991 Sales Price		1990 Sales Price	
	High	Low	High	Low
March 31	\$ 8.67	\$ 6.00	\$ 14.17	\$ 8.83
June 30	\$ 10.67	\$ 7.33	\$ 13.50	\$ 9.50
September 30	\$ 13.50	\$ 8.33	\$ 13.33	\$ 5.75
December 31	\$ 19.50	\$ 12.50	\$ 7.67	\$ 5.17

The closing price of the Common Stock as reported by the NASDAQ National Market System on February 14, 1992 was \$25.00.

Item 6. Selected Financial Data

The following table (page 13) sets forth certain financial information with respect to the Company and its predecessor (the "Predecessor") as of and for the period from March 10, 1987 (inception) through December 31, 1987, and the years ended December 31, 1988, 1989, 1990 and 1991, which was derived from audited consolidated financial statements and notes thereto of the Predecessor or the Company. The consolidated financial statements and notes thereto as of December 31, 1991 and 1990, and for the years ended December 31, 1991, 1990, and 1989, and the report of Ernst & Young thereon are included elsewhere in this Annual Report. The Company effected a three for two split of its Common Stock in the form of a stock dividend, which was distributed on February 13, 1992 to stockholders of record on January 24, 1992. Share and per share amounts for all periods presented have been adjusted to reflect the split. The selected financial data should be read in conjunction with "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and notes thereto included elsewhere herein.